

REMARKS

Claims , 4-12, and 17-19 are currently pending in the present application.

Claims 8-12 and 18-19 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Japanese Patent Publication No. JP 07-249417 (“JP 07-249417”) (Yasuhiro, *et al.*) in view of U.S. Patent No. 5,284,718 to Chow, *et al.* (“Chow”) and U.S. Patent No. 6,044,842 to Pereira, *et al.* (“Pereira”). Claims 1, 4-7 and 17 stand rejected under 35 U.S.C. § 103(a) as unpatentable over JP 07-249417, Chow and Pereira, in further in view of U.S. Patent No. 4,804,451 to Palmer (“Palmer”).

The Applicant has carefully reviewed the May 6, 2003 Office Action, and respectfully submits the foregoing amendments and following remarks in response thereto. The Applicant as amended claims 1, 8 and 17-19 to more clearly recite the invention, and to clarify that the polymer electrolyte film is bonded *directly* to the carbon separator. The Examiner’s helpful suggestions in this regard are noted with appreciation.

1. The Claims Are Patentable Over JP 07-249417 and the Other Cited References.

The Applicant respectfully traverses the rejection under § 103(a) of claims 8-12 and 18-19 as unpatentable over JP 07-249417 in view of Chow and Pereira, and of claims 1, 4-7 and 17 as unpatentable over JP 07-249417, Chow and Pereira further in view of Palmer, on the grounds that these references do not disclose or suggest the invention recited in amended claims 1, 8 and 17 and their respective dependent claims.

The amended claims now recite the bonding of a polymer electrolyte film directly to a carbon separator to improve gas sealing over the life of the fuel cell. Bonding strength is further increased by bonding of the polymer electrolyte film with a water content of not greater than 4 to the separator with an adhesive has a modulus of elasticity of not greater than 10 MPa. This minimizes the adsorption of water molecules by the adhesive functional groups, and thus results in a strong and stable bond between the two, with nothing but an adhesive between the polymer electrolyte film and the carbon separator. Because the claimed invention directly bonds the separator and the electrolyte film together and does so with an improved, resilient bond, it thereby secures proper sealing of the electrode, improving the gas sealing property and providing a long-lived seal.

In contrast to the present invention, JP 07-249417 does not teach or otherwise suggest the direct bonding of an electrolyte film to a separator. As the Examiner correctly notes, JP 249417 teaches the placement of a support frame 100 between its electrolyte film 30 and

separator 200, not *direct* bonding of the film to the separator. This deficiency is not cured by any of the remaining cited references: Chow is cited only for its alleged suggestion of use of a resilient sealing material, but does not provide and suggestion of directly bonding a polymer electrolyte film to a separator; Pereira similarly is cited only for specific properties of resilient materials, with no teachings regarding fuel cells whatsoever; and finally Palmer is cited as allegedly teaching reduction of wetness to improve bonding, but again there is no suggestion of direct electrolyte film-to- separator bonding in the manner recited in the pending claims.

In view of the cited references' failure to teach or suggest the direct bonding recited in amended claims 1, 8 and 17-18 and their dependent claims 4-7, 9-12 and 19, the Applicant respectfully submits these are patentable over the cited references under § 103(a). Reconsideration and withdrawal of the pending rejections is therefore respectfully requested.


Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that the presently pending claims are in condition for allowance. The Applicant therefore earnestly solicits issuance of a Notice of Allowance for claims 1, 4-12 and 17-19.

The Examiner is invited to contact the undersigned at (202) 220-4232 to discuss any matter concerning this application.

No additional fees are believed to be required in connection with this submission. Nonetheless, the Applicants authorize payment of any additional fees under 37 C.F.R. § 1.16 or § 1.17 or credit of any overpayment to Deposit Account No. 11-0600.

Respectfully submitted,



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